

# A MASCARA BRUSH, A MANUFACTURING METHOD AND A MASCARA RESERVOIR FOR SAME

## BACKGROUND OF THE INVENTION

5

### Field of the Invention

The present invention relates to a mascara brush comprising a plurality of bristles held between two intertwined wire sections forming a core,  
10 wherein said core comprises a curved core section; a method of manufacturing a mascara brush of this type; and the use of a mascara reservoir.

### Background Art

15 Mascara brushes of this type are known from DE 198 47 733 A1. The use of such mascara brushes often entails the problem that too much mascara is applied onto the eyelashes because the mascara brushes are overloaded with mascara. Further, such mascara brushes often have an unsatisfactory combing function. Especially in the case of upper eyelashes extending  
20 straight downward towards the lower eyelid, the known mascara brushes in addition have an unsatisfactory function of bending the eyelashes, i.e. an insufficient curl effect. This problem occurs in particular with women of Asian origin.

## 25 SUMMARY OF THE INVENTION

It is therefore an object of the present invention to further develop a mascara brush of this type in such a way that it allows the user in a simple manner to predetermine the amount of mascara to be transferred on to the

eyelashes and in particular to avoid the application of too much mascara. Further, the combing result and the curl effect should be improved.

According to the invention, this object is achieved in that at least two  
5 curved cores are provided, extending from a common handle section.

According to the invention, it was found that a mascara brush having two cores allows a better distribution of the mascara picked up by the mascara brush. Therefore, the amount of mascara to be applied on to the eyelashes  
10 can be determined better. Two curved cores, if arranged in parallel with one another, also improve the combing result during the makeup process. Even the use of a mascara brush in which at least one of the cores is straight can bring about an improvement with respect to the application and distribution of mascara. Particularly the use of a mascara brush having two  
15 cores makes possible an asymmetrical loading of the mascara brush with mascara due to the cross-sectional geometry of its brush section which is not rotationally symmetrical. In this case, the convex upper side of the curved cores is loaded less and can therefore be used to correct the makeup, particularly to remove excess mascara. If both cores are used in  
20 parallel during the application, a comparatively thick mascara layer is applied. The concave lower sides of the two cores allow the achievement of a better curl effect.

A mascara brush with the cores having essentially the same bending radius  
25 is easy to manufacture.

Different transition angles result in a splitting of the cores which in turn results in a variation of the brush area along the brush axis to be used for

loading, combing or cleaning. Also, this variation may be used for the fine regulation of the makeup process.

5 A handle section which is formed of bristle-free intertwisted wire sections being extensions of said cores is easy to manufacture.

Cores being separated starting from said handle section make possible a mascara brush which provides an enlarged application area even near said handle section.

10

When tangents of said cores intersecting in a starting point form an angle  $\beta$  which is larger than  $0^\circ$ , these cores have proved to be particularly favourable with respect to the application of mascara.

15 This also applies to the specific geometric shape of the bristle contour as well as to the fibre materials.

The attachment variants according to which said handle section is attached in a stem section centrally or off-centre allow the determination of an offset  
20 between a handle of the mascara brush and the cores which in particular simplifies handling during the application of mascara.

Stem section diameters ranging from 1.8 mm to 5.0 mm provide a good compromise between stability and ease of handling.

25

It is another object of this invention to indicate a manufacturing method for a mascara brush having at least two curved cores.

According to the invention, this object is achieved by a manufacturing method that comprises the steps of manufacturing a raw brush having at least two straight cores extending from a common handle section; inserting said cores into a bending tool having a convex bending plunger and a concave counter-plunger being essentially complementary thereto; bending  
5 said cores, wherein said bending plunger and said counter-plunger are moved towards each other and then away from each other; taking said cores out of said bending tool.

- 10 Such a manufacturing method allows simultaneous bending of the cores resulting in a reduction of the number of manufacturing steps.

It is a further object of the present invention to indicate a mascara reservoir to be used with a mascara brush according to the invention.

15

According to the invention, this object is achieved by using a mascara reservoir which comprises a circular mascara wiping aperture, through which said mascara brush is insertable into said mascara reservoir.

- 20 According to the invention, it was found that appropriately dimensioned known mascara reservoirs having a circular mascara wiping aperture can be used because the co-operation between the circular mascara wiping aperture and the bristle section normally having a rotationally asymmetrical cross-section of the mascara brush according to the invention provides a  
25 desired asymmetrical loading of the mascara brush with mascara, on which brush the convex sides of the bristle contour are loaded less than the concave sides.

An example embodiment of the present invention will hereinafter be described with reference to the attached drawing.

## BRIEF DESCRIPTION OF THE DRAWING

5

Fig. 1 shows a side view of a mascara brush according to the invention between the intimated plungers of a bending tool;

Fig. 2 shows another side view of the mascara brush shown in Fig. 1;

10

Figs. 3 and 4 show side views corresponding to Figs. 1 and 2 of a single core of the mascara brush shown in Figs. 1 and 2;

15

Fig. 5 shows a longitudinal section through a mascara reservoir to be used with a mascara brush shown in Figs. 1 and 2; and

Fig. 6 shows a plan view of a front side comprising a mascara wiping aperture of the mascara reservoir shown in Fig. 5.

20

## DESCRIPTION OF A PREFERRED EMBODIMENT

25

In Fig. 1, a mascara brush generally denoted by the reference numeral 1 comprises two cores 2, 3 having a typical diameter between 0.6 mm and 2.0 mm each of which comprises a plurality of bristles 4 for applying mascara on to eyelashes. Each of said cores 2, 3 comprises two intertwined wire sections between which said bristles 4 are held in a known manner. These intertwined wire sections having a wire thickness between 0.4 mm and 1.0 mm are not individually shown in the drawing. Said bristles 4 have essentially the same length along said cores 2, 3. Typical bristle lengths

range from 2.5 mm and 8 mm. Said bristles 4 are plastic fibre bristles but may alternatively also be natural fibre bristles. Also, there is no difference between said cores 2, 3 with regard to the bristle length. In a variant (not shown) of the mascara brush, different bristle lengths along the cores  
5 and/or cores having bristles of different lengths may be provided.

Said two cores 2, 3 are, as suggested in Figs. 1 and 2, intertwined in a handle section 5 not comprising any bristles. This handle section extends to the right in Fig. 1 and forms a handle (not shown) for said mascara brush 1.  
10 Here, said handle section 5 is centrally connected with a stem section not shown in the drawing. Alternatively, this connection can also be provided away from the centre of said handle section 5. The stem section has a diameter of 2.8 mm. In alternative embodiments of the mascara brush, the stem section may have a diameter between 1.8 mm and 5.0 mm.

15 Between transition sections 6, 7 of said cores 2, 3 which are adjacent to said handle section 5 and their ends facing away from said handle section 5 said cores 2, 3 are bent at a bending radius of approximately 30 mm around axes being parallel relative to each other and perpendicular relative to the  
20 longitudinal axis of said handle section 5 in such a way that said two cores 2, 3 resemble the horns of a capricorn. Due to this bending, bristle contours 8, 9 of said bristles 4 of said cores 2, 3 comprise concave sides 10 and convex sides 11. The bending around axes being parallel relative to each other results in the fact that said bristle contours 8, 9 in the side view shown in  
25 Fig. 2 are flush with each other when viewed at perpendicularly to the bending axes and at the same time perpendicularly to the longitudinal axis of said handle section 5.

As can be seen in Figs. 1 to 4, said cores 2, 3 in a stretched state have cylindrical bristle contours 8, 9 as said bristles 4 along said cores 2, 3 have essentially the same length. In other variants (not shown) of the mascara brush, the bristle contour may have the following alternative shapes in a stretched state of the core: cylindrical, barrel-shaped, truncated cone tapering on one or both sides, truncated cone, centrally waisted, centrally waisted with a truncated cone tapering on one or both sides.

Said mascara brush 1 shown in Figs. 1 to 4 comprises bristle contours 8, 9 having a circular cross-section. In alternative variants (not shown) of the mascara brush, the bristle contour cross-section may have the following shapes: elliptical, triangular, especially with rounded corners, rectangular, especially square-shaped, especially with rounded corners.

Typically, said cores 2, 3 have the same length between said transition sections 6, 7 and the ends facing away from said handle section 5. Said transition sections 6, 7 of said cores 2, 3 which are adjacent to said handle section 5 are positioned at different transition angles relative to the longitudinal axis of said handle section 5. The transition angle  $\alpha$  of said transition section 6 relative to said handle section 5 typically ranges between 10 and 20°. The transition angle between said transition section 7 and said handle section 5 is 0°.

On said handle section 5, a starting point E can be defined on which a portion of said handle section 5 ends and in which said two cores 2, 3 are intertwined. From said starting point E in Fig. 1 towards the left, said two cores 2, 3 start to separate from each other. From said starting point E, two tangents  $T_2$ ,  $T_3$  may be drawn along the curved central axes of said cores 2, 3. The angle  $\beta$  between said tangents  $T_2$ ,  $T_3$  is about 10° in the example

embodiment shown in Fig. 1. In other embodiments (not shown) of the mascara brush, said angle  $\beta$  may assume other values such as  $20^\circ$  or  $0^\circ$ .

In the example embodiment of the mascara brush shown in the drawing,  
5 both cores 2, 3 are curved. Alternatively, at least one of the two cores may be formed straight.

A mascara brush 1 is manufactured as follows:

10 At first, a raw brush having straight cores 2, 3 is manufactured. Here, individual straight cores are manufactured in a known manner by intertwisting two wire sections between which the bristles 4 are held. Then, the two straight cores are preferably intertwined in said handle section 5 so that the transition angles described above between said transition sections 6, 7 and  
15 the longitudinal axis of said handle section 5 are formed. At this manufacturing stage, said two straight cores 2, 3 have, together with said handle section 5, preferably the shape of the letter Y.

Then, the straight cores of the raw brush are inserted into a bending tool. A  
20 convex bending plunger 12 and a concave bending counter-plunger 13 are schematically illustrated in part in Fig. 1. The bending radii of said bending plunger 12 and said counter-plunger 13 amount to approximately 10 mm. Here, the bending radius of the convex bending plunger 12 is slightly smaller than that of said counter-plunger 13. Said bending plunger 12 and  
25 said counter-plunger 13 are moved towards each other and then away from each other, so that the originally straight cores 2, 3 are bent to assume their shape as shown in Fig. 1.

Finally, said mascara brush 1 is taken out of the bending tool.

Depending upon the desired final configuration of said cores 2, 3, the raw brush may be appropriately turned around the longitudinal axis of said handle section 5 when being inserted into the bending tool so that the flush arrangement of straight sides of said bristle contour 8, 9 results, or so that, as not shown in the drawing, said concave sides 10 and said convex sides 11 of said bristle contour 8, 9 are flush with each other. A mascara brush according to this second variant would in a side view as in Fig. 1 with a viewing direction parallel to the bending axes of said cores 2, 3 look like said single core 2 shown in Fig. 3. In a view perpendicular to this view and to the longitudinal axis of said handle section 5, such a mascara brush would preferably have the shape of the letter Y with said cores 2, 3 being straight in this view. In another variant (also not shown) of the mascara brush, the two cores are arranged so that they extend at an essentially constant distance between each other parallel to each other in the view described immediately before. In this case, the bristle-free sections of said cores 2, 3 are also attached to and connected with said handle section 5 in parallel.

Figs. 5 and 6 show a mascara reservoir 14 to be used with said mascara brush 1. The scale of Figs. 5 and 6 differs from that of Figs. 1 to 4. Said mascara reservoir 14 has an elongated, essentially cylindrical basic shape comprising on its front side a formed threaded section 15 on to which a closing cap (not shown) may be screwed. The inner diameter of said threaded section 15 is 2.8 mm. In other variants (not shown) of said mascara reservoir, the diameter of said threaded section may range between 1.8 and 5 mm. Said threaded section 15 receives a wiping sleeve 16 which is connected to said threaded section 15 in a known manner. Said wiping sleeve 16 is preferably made of an elastic material or soft plastic such as

LDPE. It is tapered towards the interior of said mascara reservoir 14 up to a circular mascara wiping aperture 17 which is defined by a peripheral wiping edge section 18. The diameter of the mascara wiping aperture 17 is 2.6 mm. In the other variants of the mascara reservoir, this diameter may range  
5 from 1.8 to 5.0 mm.

In the aforementioned variants of the mascara brush having a non-circular cross-section of the bristle contour, the cross-section of said wiping sleeve 16 and said mascara wiping aperture 17 is adapted to match the respective  
10 cross-section of the bristle contour.